



# Nutrient Timing For Sprint Performance

Zachary Blood

## Introduction

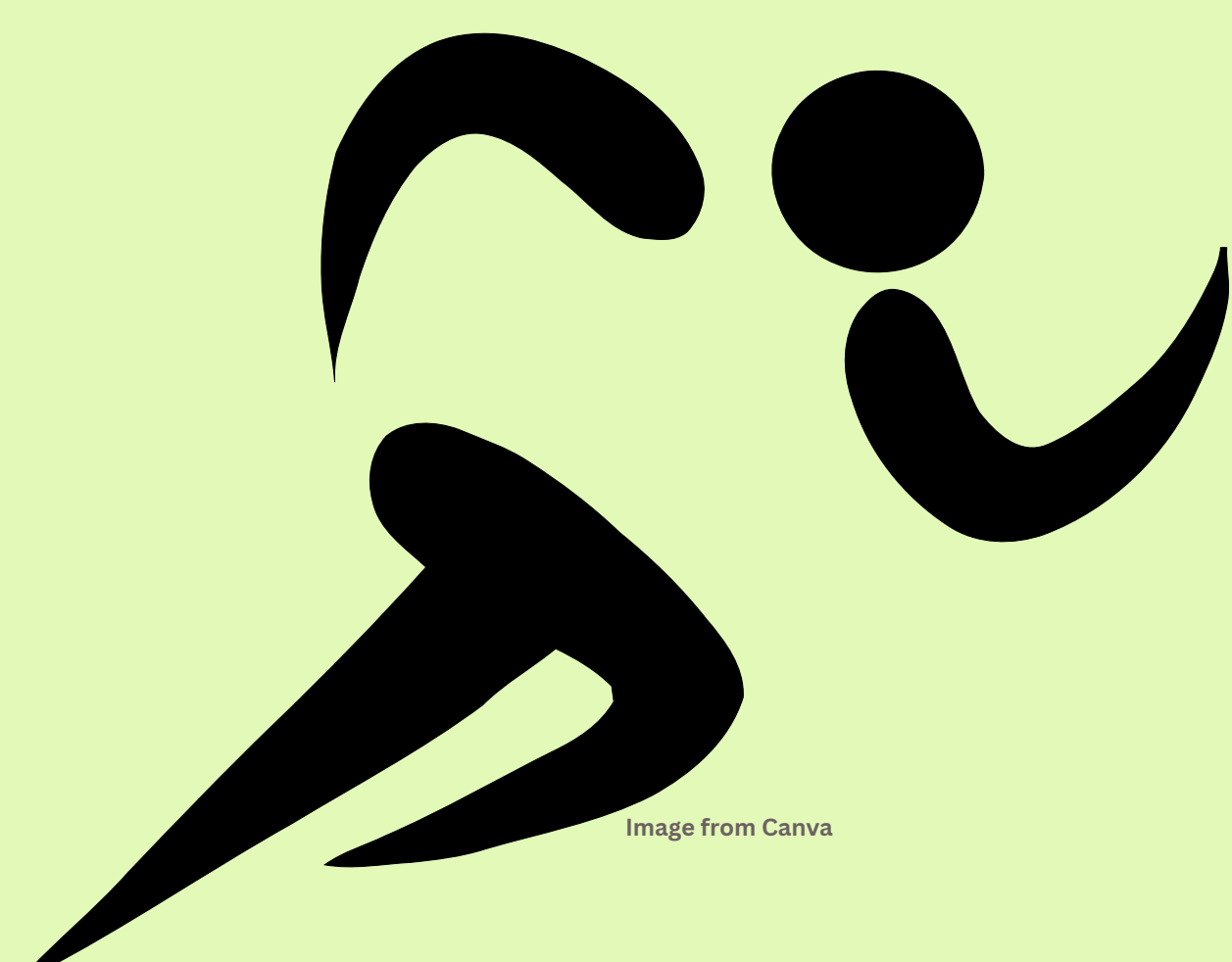
- Sprinting is a powerful, “all-out” movement; mostly anaerobic
- Nutrient timing is the strategic timing of meals around and during a workout<sup>2</sup>
- High focus on carbohydrates and protein to enhance performance, recovery, and adaptation from exercise<sup>2</sup>

## Methods

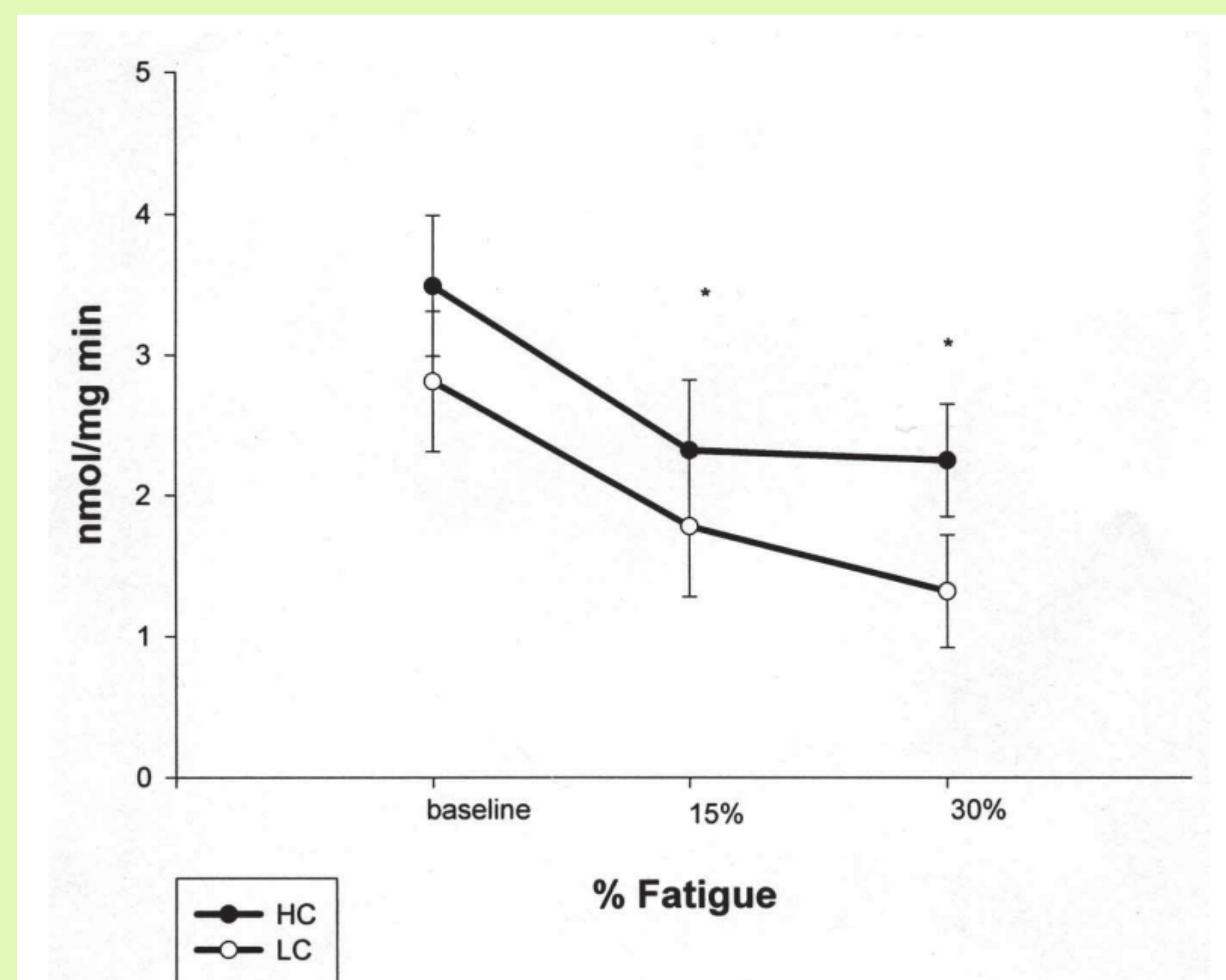
- Google Scholar, and CPH Library OneSearch
- Zotero used for article accumulation and organization
- Keywords: Carbohydrate, Sprint, Nutrient Timing, Anaerobic, Anabolic Window

## Literature Review

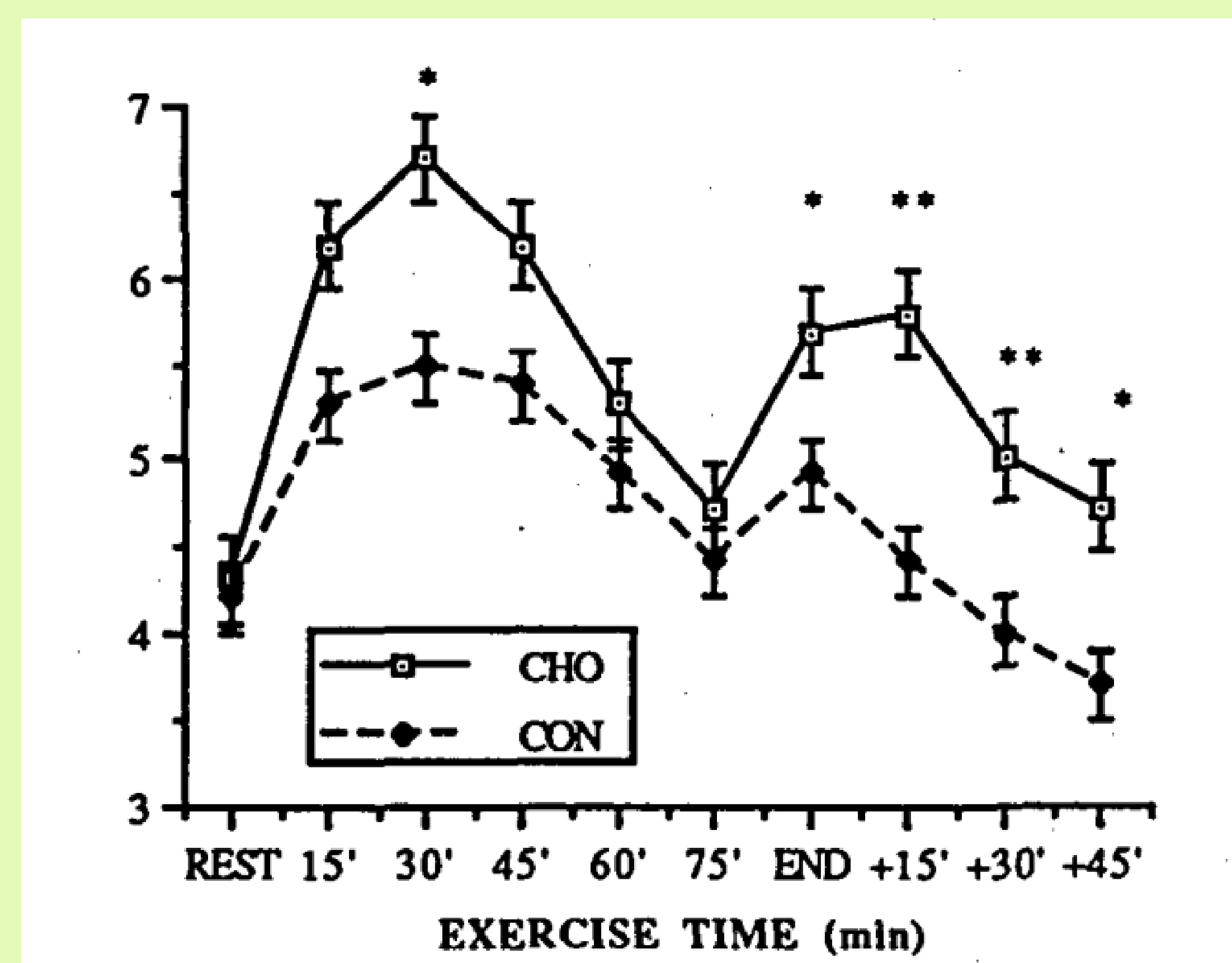
- Sprinting uses varying ratios of all three main energy systems<sup>5</sup>
- The most prominent are the Phosphagen (ATP-CP) system and the Glycolytic Anaerobic System<sup>5</sup>
- Sprinting predominantly uses Type IIa and Type IIb/IIx, fast-twitch muscle fibers<sup>5</sup>
- Fatigue can be attributed to factors such as phosphocreatine depletion, glycogen depletion, and SR impairment<sup>1,4</sup>



## Charts and Results



- Sarcoplasmic reticulum calcium release at baseline, 15% fatigue, and 30% fatigue<sup>4</sup>
- Study on the effects of muscle glycogen on fatigue and performance with repeated cycle sprints



- Blood Glucose Levels between CHO and CON trials of the prolonged intermittent high intensity shuttle run test<sup>3</sup>
- Study on carbohydrate-electrolyte solution on endurance during high-intensity shuttle runs

- Carbohydrate-electrolyte solution before and during high-intensity intermittent exercise delayed fatigue<sup>3</sup>
- Glycogen levels fell at similar rates in the CHO and CON groups<sup>3</sup>

## Conclusion

- Carbohydrate availability, in terms of glycogen or blood glucose, delays fatigue in repeated high-intensity exercise such as sprints
- High availability can be achieved through carb supplementation before and during exercise.
- Overall total nutrient intake makes the most difference in performance
- Anabolic window may not be as narrow as thought in the past.<sup>6</sup>

## Future Research

- Larger samples for studies
- More female samples
- Diverse age group samples
- Study long-term adaptations

## References

